OIPE IAP13 JUN 06 2006 PATENT & TRADEMARK OFFICE

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of

Toshifumi SATO

Appln. No.: 09/875,151

Confirmation No.: 7262

Filed: June 7, 2001

For: RECEIVED PATH TIMING DETECTING CIRCUIT AT DS-CDMA SYSTEM

Docket No: Q64872

Group Art Unit: 2631

Examiner: Kevin Michael BURD

SUBMISSION OF APPEAL BRIEF

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith please find an Appeal Brief. A check for the statutory fee of $500.00 is attached. The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account. A duplicate copy of this paper is attached.

Respectfully submitted,

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE
23373
CUSTOMER NUMBER

Allison M. Tulino
Registration No. 48,294

Date: **June 6, 2006**

OIPE IAP13 JUN 06 2006 PATENT & TRADEMARK OFFICE

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re application of

Toshifumi SATO

Docket No: Q64872

Appln. No.: 09/875,151

Group Art Unit: 2631

Confirmation No.: 7262

Examiner: Kevin Michael BURD

Filed: June 7, 2001

For: RECEIVED PATH TIMING DETECTING CIRCUIT AT DS-CDMA SYSTEM

APPEAL BRIEF UNDER 37 C.F.R. § 41.37

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with the provisions of 37 C.F.R. § 41.37, Appellant submits the following:

Table of Contents

06/07/2006 SZEWDIE1 00000023 09875151
01 FC:1402 500.00 OP

I. REAL PARTY IN INTEREST

The real party in interest is NEC CORPORATION by virtue of an assignment executed by Toshifumi Sato (hereinafter "Appellant") on June 1, 2001 and recorded in the U.S. Patent and Trademark Office on June 7, 2001 at reel 011888 and frame 0467.

II. RELATED APPEALS AND INTERFERENCES

Upon information and belief, there are no other prior or pending appeals, interferences, or judicial proceedings known to Appellant's Representative or the Assignee that my be related to, be directly affected by, or have a bearing on the Board's decision in the Appeal.

III. STATUS OF CLAIMS

Claims 1-4 are pending and are the basis of this Appeal (*see* Claims Appendix).

Claims 1-4 stand rejected.

IV. STATUS OF AMENDMENTS

Appellant did not amend the claims subsequent to the September 6, 2005 Final Office Action. Accordingly, all amendments, which have been made during prosecution of the present application, have been entered, and are reflected in the attached Claims Appendix.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

The present invention is a received path timing detecting circuit in a receiver used in a direct spread - code division multiple access (DS-CDMA) system. The features of independent claim 1 are described herein in reference to non-limiting embodiments in Appellant's specification.

Claim 1- Claim 1 recites a received path timing detecting circuit having a cross correlation coefficient calculator 104 for calculating cross correlation coefficients between a received electromagnetic signal and a reference electromagnetic signal in a predetermined cycle (Figs. 1 and 2; pg. 8, line 8-14). A differential detector 105 is provided that obtains real parts of products of complex conjugate numbers of respective elements of the cross correlation coefficients $\{R_{N-1,0}, R_{N-1,1}, R_{N-1,2}, \ldots\ldots, R_{N-1,M}\}$ calculated at the N-1st cycle (N is an integer) and respective elements of the cross correlation coefficients $\{R_{N,0}, R_{N,1}, R_{N,2}, \ldots\ldots, R_{N,M}\}$ calculated at the Nth cycle, and outputs the real parts as differential detection cross correlation coefficients $\{P_{N,0}, P_{N,1}, P_{N,2}, \ldots\ldots, P_{N,M}\}$ (Figs. 1 and 2; pg. 8, lines 14-19). An averager 106 averages the differential detection cross correlation coefficients outputted from the differential detector 105 by a predetermined time (Figs. 1 and 2; pg. 8, lines 20-21). Finally, a peak detector 107 is provided that detects one or plural peak values from the averaged cross correlation coefficients and outputs the detected one or plural peak values as the received path timing (Figs. 1 and 2; pg. 8, lines 21-24).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Claims 1, 3 and 4 stand rejected under 35 U.S.C. § 103(a), as allegedly being unpatentable over U.S. Patent No. 5,060,515 to Kanda et al. ("Kanda") in view of WO 00/01099 to Hofmann ("Hofmann"), where U.S. Publication No. 2001/0005176 is being used as an English translation of Hofmann.

B. Claims 2 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kanda in view of Hofmann and U.S. Publication No. 2003/0031195 to Okawa et al. ("Okawa").

VII. ARGUMENT

A. Rejection of claims 1, 3 and 4 under 35 U.S.C. § 103(a) in view of Kanda and Hofmann.

The Examiner has rejected claims 1, 3 and 4 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kanda in view of Hofmann.

1. Claim 1

Claim 1 recites, *inter alia*, that a differential detector obtains real parts of products of complex conjugate numbers of respective elements of the cross correlation coefficients. The real parts are output as differential detection cross correlation coefficients.

On page 2 and 3 of the September 6, 2005 Final Office Action, the Examiner maintains that column 7, lines 31-34, of Kanda disclose the claimed differential detector. The cited portion of Kanda, which happens to be claim 1 of Kanda, merely recites a difference detecting means for detecting a difference between current input frame image signals and immediately preceding frame image signals. Thus, the difference detecting means merely detects a difference between the signals of the image frames (i.e., Dn-Dn-1) (col. 3, lines 4-8). As further recited in claim 1 of Kanda, the difference detecting means forms a part of the coefficient outputting means (i.e., coefficient output circuit 15). Accordingly, the difference detecting means of Kanda is used to calculate the predetermined correlation coefficient. On the other hand, the differential detector of the present invention obtains real parts of products of complex conjugate numbers of respective elements of the cross correlation coefficients, etc., where the cross correlation coefficients have already been determined.

Accordingly, contrary to the teachings of Kanda, the differential detector of the present invention manipulates the correlation coefficients already calculated. For at least this reason, Appellant submits that Kanda fails to teach or suggest the claimed differential detector.

In the January 20, 2006 Advisory Action, the Examiner refers to column 6, lines 7-46 of Kanda and maintains that Kanda discloses that preceding data supplied from the memory is input to a determining circuit. Thus, the Examiner maintains that Kanda manipulates correlation coefficients already calculated. However, the cited portion of Kanda merely discloses that digital data N, supplied from the input buffer 37, and the immediately preceding data Φ, supplied from the frame memory 39, are input to the determining circuit unit 40. Such disclosure fails to teach or suggest that real parts of products of complex conjugate numbers of respective elements of the cross correlation coefficients, etc., are obtained, where the cross correlation coefficients have already been determined.

In addition to the above, the cited portion of Kanda fails to disclose the specific features of the claimed differential detector, where only the "real parts" of the coefficients are output as differential detection cross correlation coefficients. In the January 20, 2006 Advisory Action, the Examiner maintains that the above feature is not recited in claim 1. However, as shown in lines 9-10 of claim 1, in the attached Claims Appendix, claim 1 recites, "...and outputs said real parts as differential detection cross correlation coefficients." (emphasis added) Appellant submits that Kanda fails to teach or suggest such a feature.

Claim 1 also recites an averager for averaging the differential detection cross correlation coefficients outputted from the differential detector.

As stated above, Kanda fails to disclose the claimed differential detector. Accordingly, the averaging circuit 47 of Kanda likewise fails to teach or suggest the claimed averager that receives coefficients output from the differential detector.

Finally, claim 1 recites a peak detector that detects one or plural peak values from the averaged cross correlation coefficients.

In the September 6, 2005 Final Office Action, the Examiner maintains that column 7, lines 35-37 (i.e., the detecting means) discloses the above feature (pg. 3 of Office Action). Similar to Kanda's difference detecting means discussed above, however, the detecting means of lines 35-37 forms a part of the coefficient outputting means 15. The maximum value detected in Kanda is the maximum value of the differences obtained by the difference detecting means for originally calculating a coefficient. Thus, for at least this reason, the detecting means of Kanda fails to teach or suggest the claimed peak detector.

Further, as set forth in the July 13, 2005 Amendment, Kanda specifically addresses an image signal processing circuit which employs a frame correlation circuit for performing a frame correlation process for an ultrasonic image signal and a coefficient output circuit for changing a frame correlation coefficient in accordance with a difference between an input frame image and an immediately preceding frame image. (Col. 1, lines 38-46). It is clear that Kanda's apparatus addresses image processing only. There is absolutely no disclosure, teaching or suggestion that Kanda's apparatus is used, or could be used, for processing electromagnetic signals (received signals, reference signals, etc.), as recited in independent claim 1.

The Hofmann reference is the only reference the Examiner cites which addresses electromagnetic signals in any manner. However, there is absolutely no suggestion in Hofmann, or for that matter in Kanda, that these two references are combinable. In fact, there is no disclosure, teaching or suggestion in either of the references, either alone or in combination, that Kanda's image processing apparatus could be combined with Hofmann's signal transmission apparatus to produce Appellant's claimed invention.

Based on the foregoing, and since Hofmann fails to cure the above deficient teachings of Kanda, Appellant submits that claim 1 is patentable over the cited references.

2. Claims 3 and 4

Since claims 3 and 4 are dependent upon claim 1, Appellant submits that such claims are patentable at least by virtue of its dependency.

In addition, Kanda fails to teach or suggest the use of a standard deviation of the averaged cross correlation coefficients, or the use of the standard deviation for the averaged cross correlation coefficients except the peak values, as recited in claim 4. Since Hofmann fails to cure the deficient teachings of Kanda, Appellant submits that claim 4 is patentable is over the cited references.

B. Rejection of claim 2 under 35 U.S.C. § 103(a) in view of Kanda, Hofmann and Okawa.

The Examiner has rejected claim 2 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kanda, Hofmann and Okawa. However, since claim 2 is dependent upon claim 1, and Okawa fails to cure the deficient teachings of Kanda and Hofmann, in regard to claim 1, Appellant submits that such claims are patentable at least by virtue of their dependency.

Unless a check is submitted herewith for the fee required under 37 C.F.R. §41.37(a) and 1.17(c), please charge said fee to Deposit Account No. 19-4880.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

Allison M. Tulino
Registration No. 48,294

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE
23373
CUSTOMER NUMBER

Date: **June 6, 2006**

CLAIMS APPENDIX

CLAIMS 1-4 ON APPEAL:

1. (rejected) A received path timing detecting circuit in a receiver used in a direct spread - code division multiple access (DS-CDMA) system, comprising:

a cross correlation coefficient calculator for calculating cross correlation coefficients between a received electromagnetic signal and a reference electromagnetic signal in a predetermined cycle;

a differential detector that obtains real parts of products of complex conjugate numbers of respective elements of said cross correlation coefficients { $R_{N-1,0}$, $R_{N-1,1}$, $R_{N-1,2}$, ..., $R_{N-1,M}$ } calculated at the N-1st cycle (N is an integer) and respective elements of said cross correlation coefficients { $R_{N,0}$, $R_{N,1}$, $R_{N,2}$, ..., $R_{N,M}$ } calculated at the Nth cycle, and outputs said real parts as differential detection cross correlation coefficients { $P_{N,0}$, $P_{N,1}$, $P_{N,2}$, ...,$P_{N,M}$ };

an averager for averaging said differential detection cross correlation coefficients outputted from said differential detector by a predetermined time; and

a peak detector that detects one or plural peak values from said averaged cross correlation coefficients and outputs said detected one or plural peak values as said received path timing.

2. (rejected) A received path timing detecting circuit in accordance with claim 1, wherein:

said reference signal is a transmitted signal with an inserted pilot code for executing coherent detection, and wherein said transmitted signal is spread by a spreading code allocated to a predetermined receiver.

3. (rejected) A received path timing detecting circuit in accordance with claim 1, wherein:

said averager applies an exponential weighting average or a moving average to said differential detection cross correlation coefficients by using a predetermined time constant, when said differential detection cross correlation coefficients are averaged.

4. (rejected) A received path timing detecting circuit in accordance with claim 1, further comprising:

a threshold valuator that obtains a standard deviation of elements of said cross correlation coefficients averaged at said averager except said peak values, and compares a relative value among said plural peak value positions detected at said peak detector with a threshold value obtained by said standard deviation multiplied by a predetermined factor, and outputs an effective received path timing when said relative value exceeded said threshold value.

EVIDENCE APPENDIX:

NONE

RELATED PROCEEDINGS APPENDIX

NONE